

- 21. A method of de-inking waste printed paper, comprising
- a) pulping waste printed paper with an enzyme capable of dislodging ink particles from the waste printed paper in an aqueous medium at a pH between about 3 to 8, and wherein the ink is dislodged from the waste printed paper by action of said enzyme; and
 - b) removing dislodged ink particles from the resulting pulp containing medium.

a¹ 22. The method of Claim 21 wherein dislodged ink particles are removed by flotation.

23. The method of Claim 21 wherein dislodged ink particles are removed by washing.

24. The method of Claim 21 wherein the amount of enzyme used is in the range of about 0.005 to about 5 percent-by-weight based on the dry weight of the wastepaper.

25. The method of Claim 21 wherein said enzyme is selected from the class consisting of cellulase, hemicellulase, pectinase, other carbohydrases and mixtures thereof.

26. The method of Claim 21 wherein said enzyme is a cellulase selected from the group consisting of cellulases derived from *Trichoderma viride*, *Aspergillus niger* and mixtures thereof.

27. The method of Claim 21 wherein the pH of said aqueous medium is from about 3 to 7.

28. The method of Claim 21 wherein the pulping occurs at a consistency of pulp of about 12% or greater.

29. The method of Claim 21 wherein the pulping occurs for a period of less than about 1 hour.

30. The method of Claim 21 wherein the temperature of the pulping is in a range of from about 20°C up to about 60°C.

31. A method of recycling waste printed paper, comprising
- pulping waste printed paper;
 - contacting waste printed paper with an enzyme capable of dislodging ink particles from the waste printed paper in an aqueous medium at a pH between about 3 to 8, and wherein the ink is dislodged from the waste printed paper by action of said enzyme; and
 - removing dislodged ink particles from the resulting pulp containing medium.
32. The method of Claim 31, wherein the enzyme is a cellulase selected from the group of cellulases derived from *Trichoderma viride*, *Aspergillus niger* or mixtures thereof wherein said cellulase is used in an amount between about 0.005 and about 5.0 percent-by-weight based on the dry weight of said waste printed paper, said contacting being carried out at a temperature between about 20°C and about 60°C.
33. The method of Claim 31 wherein the amount of enzyme used is in the range of about 0.005 to about 5.0 percent-by-weight based on the dry weight of the wastepaper.
34. The method of Claim 31 wherein the enzyme is selected from the class consisting of cellulase, hemicellulase, pectinase, other carbohydrases and mixtures thereof.
35. The method of Claim 31 wherein said enzyme is a cellulase selected from the group consisting of cellulases derived from *Trichoderma viride*, *Aspergillus niger* and mixtures thereof.
36. The method of Claim 31 wherein the ink particles are removed by flotation or washing.
37. The method of Claim 31 wherein the pH of said aqueous medium is from about 3 to 7.
38. The method of Claim 31 wherein the pulping occurs at a consistency of pulp of about 12% or greater.
39. The method of Claim 31 wherein the pulping occurs for a period of less than about 1 hour.